

WHAT IS CLAIMED IS:

1. A method of representing a numerical value in an information processing apparatus comprising:

- a. storing an integer portion of said numerical value in a first storage area;
- 5 b. storing a fractional portion of said numerical value in a second storage area;
- c. wherein said first storage area and said second storage area are non-contiguous;
- d. wherein an integer portion of said numerical value can be fully determined by reference to said first storage area; and
- e. wherein a fractional portion of said numerical value can be fully determined by reference to
- 10 said second storage area.

2. The method according to claim 1 wherein said integer portion is stored in said first storage area according to a standard binary integer format.

3. The method according to claim 2 wherein said integer portion is stored in said first storage area as a signed 2's complement binary integer.

15 4. The method according to claim 1 wherein said fractional portion is stored in said second storage area according to a standard binary integer format.

5. The method according to claim 4 wherein said fractional portion is multiplied by a scale value and then stored in said second storage area according to a standard binary integer format.

6. The method according to claim 5 wherein said scale value is an integer power of 10.

20 7. The method according to claim 4 wherein said fractional portion is stored in said second storage area as a signed 2's complement binary integer.

8. The method according to claim 1 wherein:
said integer portion is stored with a separate integer portion sign bit; and
said fractional portion is stored with a separate fractional portion sign bit.

25 9. The method according to claim 1 further comprising:
determining character codes for said numerical value by separately determining character codes
for said integer portion and said fractional portion; and

concatenating separately determined character codes to provide character codes for said numerical value.

10. An apparatus in a computing system for handling real numbers comprising logic modules to perform the method as recited in claim 1.

5 11. A method allowing an information handling system to handle a range of real numbers comprising:

creating an IP.FP data template in a memory of said information handling system;

wherein said data template provides non-contiguous storage areas for:

a decimal part, and

10 a fractional part of real number values;

using a plurality of IP.FP logic routines for performing numerical and logic operations on numerical values stored in IP.FP format.

12. A method of speeding up operation of a computer system performing math operations on numerical values comprising:

15 a. storing an integer portion of a numerical value in a first storage area;

b. storing a fractional portion of said numerical value in a second storage area;

c. wherein said first storage area and said second storage area are non-contiguous;

d. using a plurality of custom functions to perform logic and arithmetic operations on said numerical value, said custom functions explicitly handling carry and bit shifting operations involving said numerical value.

13. A device for handling numerical values in an information processing system comprising:

a. first means for storing integer portions of said numerical values;

b. second means for storing fractional portions of said numerical values;

c. said first means and said second means being non-contiguous;

25 d. wherein an integer portion of a numerical value can be fully determined from said first means; and

e. wherein a fractional portion of a numerical value can be fully determined from said second means.

14. The device of claim 13 further wherein:

30 an integer portion is stored in said first means using a standard binary integer format; and

said integer portion is stored in said first means as a signed 2's complement binary integer.

15. The device of claim 13 further wherein:

a fractional portion is multiplied by a scale value and then stored in said second means using a standard binary integer format.

5 16. The device of claim 13 further wherein:

said integer portion is stored with a separate integer portion sign bit; and
said fractional portion is stored with a separate fractional portion sign bit.

17. The device of claim 13 further comprising:

means for determining character codes for a numerical value stored as an integer portion and an
10 fractional portion that separately determine character codes for said integer portion and said
fractional portion.

18. A fixed media containing logical instructions that when loaded into an appropriately
configured digital apparatus causes the apparatus to operate in accordance with the method of claim
1.

15 19. A system of improving performance in handling numerical value in an information
processing apparatus comprising:

a first logic routine for analyzing numerical values in said information processing system, said
first logic routine:

storing an integer portion of said numerical value in a first storage area;
20 storing a fractional portion of said numerical value in a second storage area; and
returning a pointer to said first and said second storage area;

a numerical processor module comprising:

a logic interface for receiving pointers to one or more numerical values stored as integer
portions and fractional portions;

25 a logic interface for receiving an indication of a requested operation to be performed on said
one or more numerical values;

processing logic for performing said requested operation and for explicitly handling any
necessary carry or bit-shifting operations of said numerical values.

20. The system of claim 19 wherein said system is implemented as run-time computer logic instructions executing in an application and/or operating system process space of an information processing system.

21. The system of claim 19 wherein said system is implemented comprising one or more custom logic hardware components of an information processing system.

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